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Francis Parkman.

FRANCIS PARKMAN died last week after a short illness at his home, on the banks of Jamaica Pond, in Boston. It does not come within our province to speak of Mr. Parkman's great achievements as a man of letters which have added such lustre to American scholarship; nor is it our purpose here to repeat the story of the fortitude, endurance and singleness of purpose which enabled him to complete, under the most trying physical limitations, the work which, as a youth, he laid out for himself, and upon which he labored heroically during half a century. His life has made the nation greater; and its example is a blessing to every American. His love of nature was one of the strong characteristics of the man; he loved to woo her in her untamed solitudes, and to paint in glowing words the beauties of the forests and the streams, which were the great stages upon which his characters played their parts. It vitalized his pages and made his descriptions of our American forests of two centuries ago at once the most picturesque and the most accurate which have been written.

Every one who has read one of Mr. Parkman's histories knows how he loved Nature, but many of our younger readers, perhaps, will have forgotten that twenty years ago he was a successful and distinguished horticulturist. When the historian of the conquerors of the great lakes and rivers of the continent could no longer follow their footsteps in the forest he found solace in the garden, where he tried to regain his lost health and strength. It is as a rosarian that Mr. Parkman is best known among horticulturists. He was one of the first Americans to cultivate a collection of Roses upon scientific principles, and his example has done more, perhaps, than that of any other man to raise the standard of Rose-growing in America to its present excellence. *The Book of Roses*, which he published in 1866, and which embodies sound cultural instruction with an account of the different races of his favorite flower, is still the best work within the limits of this field that has been written on the subject.

In 1861, a small collection of plants, purchased from a nurseryman at Yokohama by Dr. George R. Hall, was placed in Mr. Parkman's hands to propagate. This was probably the first collection of plants sent directly to America from Japan; in it were several plants now well known in our gardens, including the double-flowered Apple, which bears Mr. Parkman's name and which is still standing in his garden, several Retinosporas, Thuya dolobrata, Rhododendron brachycarpum, Andromeda Japonica, the double-flowered Wistaria, and bulbs of the familiar Lilium auratum, which Mr. Parkman flowered before any one else in America or Europe.

To the cultivation of Lilies, which were always favorites with him, he devoted much attention, trying to improve them by cross-breeding; in this he had at least one conspicuous success with Lilium Parkmani, which he raised by crossing Lilium auratum with Lilium speciosum. A paper from his pen, published in the *Bulletin of the Bussey Institution of Harvard College*, records the results of his experiments in hybridizing Lilies. In the improvement of plants by cross-breeding, Mr. Parkman was always interested, and many good varieties of Iris, Delphinium, Pæony and Poppy were born in his garden. He was one of the first Americans to grow a collection of herbaceous plants; and his garden was always full of interesting shrubs, bulbs and hardy perennials.

For a short time Mr. Parkman was professor of horticulture in Harvard University, which he served faithfully for many years as an Overseer and then as a Fellow, and for two years he was president of the Massachusetts Horticultural Society.

In the development of horticulture in America, Mr. Parkman's influence has been considerable and always in the right direction, and of those Americans who have practiced the gentle art, not one has brought to it a more sincere love or a keener intelligence.

What Shall we Plant?

WHEN a man begins to plant his home-grounds, with the primary aim of making a consistent picture of the whole, or, if he is wiser still, and designs his house and its surroundings together so that they make one inseparable composition, he should select every tree and shrub and herb, not for its individual decorative qualities, but for its value in helping to realize and express the ideal house-scene which he has mentally created. His fences, his walks and lines of approach, his stretches of grass, the masses of verdure which connect his house-foundations with the grounds, are all features of one scene, and they are all so related to each other that we should not consider the attractiveness of single elements apart from the rest, but should estimate their value as they help to round out the symmetry and beauty of the whole. To create a good house-scene is the work of a real artist, and artists of the first rank are rare in every profession, more rare, perhaps, in landscape-gardening than in any other of the arts of design.

But men may plant with pleasure and intelligence even when they have not this high creative faculty. To secure a collection of shrubs chosen for striking habit, or profuse flowering, or because they are curious and rare, or simply because they are vegetable anomalies, whose merit consists in blanched or spotted or highly colored foliage, may not be an unworthy ambition. And since the collector's regard is for individual plants, he is not to be criticised if in his arrangement of them his only aim is to show each one to the best advantage, without any regard to the effect which they produce when taken together. It is safe to say, however, that any one fails to get the highest possible enjoyment out of horticulture unless he recognizes some definite system under which he selects and arranges his plants. If he is interested in them simply because they are odd or novel he should not delude himself with the belief that he loves them for their beauty. He may obtain keener enjoyment from vegetable freaks and curiosities than from plants which are simply beautiful, and if this is so no one has a right to protest against the indulgence of such a passion. The

people who live next door to him may regret his inclination, but their case is not so hard as it would be if he chose to build a house which was eccentric or conspicuously ugly. A great deal of intelligent and not unprofitable pleasure can be derived from a garden filled entirely with rare or abnormal plants, although they would be much less beautiful than the common plants in ordinary gardens. But in this case, too, the man who has a paramount love for oddities should recognize it as such, and he should not try to persuade himself or his neighbors that his museum is filled with objects of beauty, or that his treasures have more value than theirs.

But because a man has a right to plant his grounds as he pleases, it does not follow that he would not be able to enjoy himself more if he cultivated a broader taste, and certainly one who aims to set forth beauty in its purest form is in so far an educator of all within the circle of his influence. We are creatures of habit. Few people have a sense of beauty so keen and true that they are unmoved by fashion; few people are free from a desire of imitation or of rivalry, and it is quite possible that the impulse to imitate or copy a display of novelties and oddities will be as strong as the desire to profit by object-lessons of the purest taste. The man who makes the love of beauty his aim, in the practice of the arts of horticulture, deserves to be commended for his public spirit therefor no less than for his good taste.

But after the decision has been made to feed and develop the æsthetic sense rather than the desire for curiosity, the planter still has to limit his activity. No matter how boundless his wealth or his acres, no one can cover the whole field of horticultural effort. The commercial florist, whose business success depends on offering to the public what is most in demand, cannot be blamed if he grows every novelty, whether meritorious or not. But it is the amateur's fault if he fills his grounds with abnormal plants which are valued solely because they vary from nature's good intentions, and in this way perpetuate her freaks and perhaps her diseases. He has no excuse for allowing charming garden-flowers to be forgotten because they are old-fashioned and filling their place with others which are not as good, simply because they are new; nor for cultivating varieties of flowers, conspicuous only for enormous size, and neglecting the smaller ones which have more refinement; or for discarding a single flower which may be one of nature's most perfect essays in the beauty of form, for a double one which may be only a shapeless mass of petals. Of course, no one can afford to ignore the wealth of plant beauty which modern exploration is constantly sending to our gardens on trial, and no one should discourage the production of hybrids, for in them we may secure some addition to the vigor and beauty of well-known species. But the amateur who learns to distinguish among novelties those which are really desirable, must be firm, not only to select the good, but to discard the bad; and he should constantly bear in mind that horticulture is not advanced by increasing the amount of material at its disposal, but by a steady improvement in its quality.

One further limitation ought to be laid down. He has the most pleasure and success who devotes himself to a few classes of trees or shrubs or flowers instead of vaguely spreading his efforts over as large a portion as possible of the vegetable kingdom. A comprehensive collection of Roses, a rich pinetum, a full array of Rhododendrons, an interesting assortment of Daffodils or Irises, or a garden full of flowering shrubs which will successively decorate it with changing colors as the months go by—any one of these is sure to prove more attractive to its owner than a heterogeneous collection of all kinds of plants, not one of which is carefully studied or sympathetically understood. Of course, this does not mean that all plants except some favorite should be banished even from the smallest garden. There is time for excursions into other fields even when attention is devoted mainly to one or two. But specialization of effort and sympathy is always fruitful of instruction and delight. It indulges that passion for collecting which is one of man's most curious but lasting pleasures. It prompts that minute and loving observation of differences which means a rich development of the sense of beauty; and it excites that fostering and affectionate sentiment which enlarges and sweetens character. Furthermore, in developing his own collection, the humblest amateur, if he sets about it with enthusiasm, can materially enlarge by his experiments the resources of knowledge and pleasure for other people; and this is especially true if, instead of devoting himself to popular favorites, he chooses plants which have not received much attention, as, for example, some of our native shrubs, the choicer kinds of Iris; some of our native wild flowers, like our native terrestrial Orchids.

And, finally, even when the amateur devotes himself to a beautiful class of plants, there is always room for choice among varieties. And here it may be difficult for him to persuade himself that among his beautiful Irises or Rhododendrons there are some varieties which are defective in form or impure in color, and he shrinks from discarding one from the total number which he takes pride in counting on his list. This is a mistake. No collection of plants made in the interest of beauty is improved by the addition of individuals which are not of the best type. No class of plants is improved by perpetuating a variety which has not some new charm to recommend it. The purification of a collection ought to lie as near an owner's heart as its enlargement, and if he can show twenty lovely varieties of one flower, or twenty fine species of coniferous trees, he has a truer æsthetic instinct than if he boasts of fifty varieties but shows some flowers which are poor in color or bad in form, and keeps among his trees species which have to be coaxed into living instead of those which seem to rejoice in life. In the case of botanical collections, or in gardens for scientific use, this rule would not hold, but amateurs should not forget that it is beauty alone which gives garden-plants their value. If this standard is not insisted on, the art of horticulture may fall into disrepute with persons of keen æsthetic sensibilities, and take a lower rank than it deserves among the arts which refine and elevate the human race.

Botanical Notes from Texas.—XIII.

THE face of the country from Laredo to San Diego, about one hundred miles, does not differ materially in aspect from the country along the railway from Laredo to San Antonio, and the forests are composed of nearly the same kinds of shrubs. The country is more sandy, apparently more sterile, and shows less signs of civilization. Around the little village of Peña, the deep sand is blown and drifted like snow. It only needs the presence of Arabs and camels to make it a littoral desert. But a few miles back we had seen an artesian well of moderate depth, overflowing from a six-inch pipe. Such wells may prove to be the material salvation of this region. This part of Texas is mainly a cattle-country. The occasional wind-mill towers, which the traveler may see from the car-window, usually mark the location of the ranches. Vast tracts of land are held by the cattle kings and cattle queens of Texas, containing from ten thousand to five hundred thousand, and even to a million acres. These ranges are valuable for stock-raising, because the original cost of the land was a mere trifle, and the present taxes are merely nominal. The present drought, of nearly three years' duration, has caused great loss of live stock throughout this region. I was told at Alice that during the period of the drought six hundred car-loads of cattle-bones, gathered from the pastures, had been shipped from that station. All stock-raising in such a loose way is destructive to civilization and to the natural wealth of a country. Every merely pastoral country gradually becomes a desert. The tendency is always to overstock the range. To destroy, and then to seek new pastures, is the rule. A region depastured by cattle, swine, sheep and goats will rapidly change for the worse, and every plant and tree whose leaves, fruit or roots any of those animals use for food will sooner or later disappear.

Of course, the right of these cattle people to hold their vast estates and to use them in their own way is not questioned. I have frequently shared the hospitality of cattlemen, and know that they are intelligent, large-hearted, honorable men, as are the larger proportion of the cow-boys themselves. But the time will come when the breaking up of these vast estates will be for the best interests of all concerned. This means improved agriculture where it is practicable, and civilization with all the happy incidents which attend it. It means more homes, more gardens and orchards, and more fields of cotton and grain. It does not mean less, but more and better stock, for any long-continued successful system of agriculture implies abundance of good stock, well cared-for and fattened at home. This region had much better remain as it is than to be settled hastily by people who are ignorant of the country and who have barely sufficient means to bring them here.

I have seen this section at its worst, for which I am not sorry. Gradually, but rapidly enough for the best interests of the country, as means of irrigation are provided from the rivers, from artesian wells and from the surplus water of rainy seasons held in reservoirs and by dams, this portion of Texas will become comparatively populous. Here in Duval County several thousand bales of cotton are annually raised without irrigation. I have seen good fields of that wonderful dry-country plant growing still farther westward. Corn and sorghum are also raised in this county, and winter gardens are successful.

San Diego is a pleasant and enterprising little village, about fifty miles west of Corpus Christi. It lies a little south of the twentieth parallel, and is near the ninety-ninth meridian. A creek-bed extends through the western part of the village, and when heavy rains occur it becomes nearly a river. Duval County is about the eastern limit of our distinctively southwestern Cocculus diversifolius. The specific name of this species is significant of the careless way the plant has fallen into of forming its leaves without much regularity as to their size and form. They are commonly slightly heart-shaped, obtuse at the summit and abruptly mucronate. Yet, sometimes on the same branch they are oblong or even linear. The species is a less rampant grower than C. Carolinus, though it sometimes climbs ten to fifteen feet high. Its small flowers are yellowish. They are succeeded by small drupes, which are black, with a bloom when ripe.

South-western Passiflora fœtida grows about San Diego. I have collected it as far eastward as Rockport, climbing over bushes close to the waters of Aransas Bay. It sometimes trails. It grows also in Bee County, near Beeville, and along the Rio Grande as far north as Eagle Pass, and southward to the equator. It furnishes its flowers and fruit with a three-parted netted involucre, like our P. incarnata and the newly discovered P. Palmeri, whose leaves those of our species closely resemble in form. The whole plant, green fruit and all, is offensively fœtid.

On the right bank of the arroyo, about a mile below the town, Coursetia axillaris grows. Here it is a low shrub, three to five feet tall. It is said to rise at times into a tree. This interesting, but little-known, member of the Pea family may readily be recognized by having the leaflets of the lowest pair rounded in form, while the leaflets of the other pairs are obovate; by its solitary yellow flowers and its deeply lobed flattish pods.

Kansas City, Kan. *E. N. Plank.*

Notes on the Forest Flora of Japan.—XXIV.

CEPHALOTAXUS DRUPACEA is the only Japanese member and the type of a genus of half a dozen species distributed from Japan, through China to northern India. It is widely and quite generally scattered through the mountain-regions of the empire, extending north to central Yezo, where it appears on the low hills as an undershrub, only two or three feet high, while on the Hakone Mountains, in Hondo, it occasionally grows into a bushy tree twenty or twenty-five feet in height. Cephalotaxus drupacea is now a familiar object in our gardens, although it is not very hardy or satisfactory here in New England, where it often suffers in winter, missing, no doubt, the thick and continuous covering of snow which protects it in Yezo. Like its relative, the Gingko, the same individual does not produce male and female flowers, and the fruit, like that of the Gingko, is an almond-like nut enclosed in a fleshy covering. A resinous oil, used in lamps, is pressed from the seeds, and the wood is occasionally employed in cabinet-making.

The Gingko, although we are always in the habit of associating it with Japan, is in reality not a native of that country, into which it was brought with their religion by the Buddhist priests. It is still unknown in a wild state, and it is possible that this genus, which was widely distributed with many species, through the temperate and colder parts of the northern hemisphere in tertiary times, has become exterminated from its native forests, and has only been preserved through the agency of the priests of Buddah, who seem to hold it in particular respect. The hardiness of this beautiful tree, which thrives under the most trying conditions and in the severest climates, indicates that it originated in some northern interior region; and if it is ever seen growing without cultivation it will be found probably in some remote district of Mongolia. There are noble, great, broad-branched specimens in the neighborhood of the temples in Tôkyô fully a hundred feet high, with tall massive trunks six or seven feet in diameter. The Gingko is, perhaps, the most beautiful, as it is certainly the most interesting tree which is to be seen in Japan; and in the autumn, especially when the sunlight flutters through the bright yellow leaves, these great trees, with their broad heads of graceful semi-pendulous branches, are magnificent objects. The fleshy covering of the fruit has a rancid and most disagreeable flavor, but the kernel of the almond-like stone is delicate and is esteemed a luxury in both China and Japan, where it is found in the markets in considerable quantities. The wood, which is light yellow in color, is soft and brittle, and as the trees grow to a very great age and are only planted for ornament in Japan and rarely cut down, it has no economic importance there.

Torreya, or, if the custom which now prevails among American botanists is followed, Tumion, Rafinesque's name, which also appears in eastern and western America and in China, occurs in Japan in its largest and most beautiful representative, Tumion nuciferum, one of the handsomest of all coniferous trees. Although nowhere very common, the Kaya, as this tree is called in Japan, was seen in all the mountainous regions of central Hondo which we visited. It often grows as an undershrub in the forest, or as a small tree twenty or thirty feet tall, but occasionally rises to the dignity of a tree of the first class, as on the banks of the Kiso-gawa, near Agematsu, we saw specimens fully eighty feet high, with great trunks four or five feet in diameter. Such trees, with their bright red bark and compact heads of dark green, almost black lustrous foliage, possess extraordinary beauty. No other Yew-like tree which I have seen equals it in massiveness and depth of color, and the Kaya should be cultivated wherever the climate permits it to display its beauty. The elevation above the sea at which it flourishes in Japan indicates that it will be hardy in the middle states, although we cannot expect to see it grow to any size in New England. An oil used in cooking, Kaya-no-abura, is an article of considerable commerce in Japan, and the kernels of the nuts, which possess an agreeable, slightly resinous flavor, are sold in great quantities in the markets in the autumn, and are a favorite article of food. The wood is strong, straight-grained, light yellow, and valued in building and cabinet-making.

Taxus, which has two species in eastern America, one in the north and another, almost the rarest of American trees, in the south, which is represented in western North America, and is widely distributed through Europe and continental Asia, appears in Japan with a noble tree, Taxus cuspidata, which, to judge by our observations, is confined to the island of Yezo, where it is not uncommon on the low hills of the interior. Here it often attains the height of forty or fifty feet, and forms a trunk two feet in diameter, covered with bright red bark. The Yew is often employed by the Japanese to ornament their gardens, and the wood, which is exceedingly hard, tough and of a bright red color, is used by the Ainos for their bows, and is valued in cabinet-making and for the interior decorations of expensive houses. This beautiful tree, as is now well known, flour-

ishes in this country, where it has proved itself perfectly hardy, and where it promises to be really valuable as an ornamental plant.

It is not thought now that Podocarpus, a genus of the tropical and sub-tropical regions of both hemispheres and of Tasmania, is indigenous in Japan, although two species are often cultivated there. The more common is Podocarpus macrophylla, a small tree with lanceolate, acute leaves, and a common hedge-plant in Tôkyô gardens, in which it is also often seen cut into fantastic shapes. It is a much less beautiful, although a hardier, tree than Podocarpus Nageia, with its thick, broad, glossy leaves and beautiful purple trunks, the second species seen in Japan. It is one of the favorite subjects, especially in a variety in which the leaves are marked by broad white stripes, for dwarfing and pot-culture. The real beauty of this tree is only seen, however, when it has become large and old and the trunk is covered with its peculiar smooth purple bark. A grove of these trees on the hill behind the Shinto temples at Nara is one of the most interesting spots in Japan, and in solemn dignity and beauty is only surpassed by the grove of Cryptomerias which surround the mausoleums of Ieyasu and Iemitsu at Nikko.

Like Cryptomeria, Sciadopitys is monotypic and endemic to Japan. It is one of the most curious and interesting of trees, with scale-like leaves in whose axils are produced the phylloid shoots, which are generally mistaken for the leaves, and which are arranged near the ends of the branches like the ribs of an umbrella—a peculiarity to which this tree owes its familiar English name, the Umbrella Pine.

Like the Gingko, the Sciadopitys was for a long time only known from a few individuals cultivated in temple-gardens and from the grove on the hill in Kiushiu, where the great monastery town of Kôya stands, to which the Sciadopitys owes its Japanese name, Kôya-maki. There is said to be a remarkable grove of these trees here, which was once supposed to be the original home of the species, but Rein and other writers now agree in thinking that they were originally planted by the monks. Dupont found what he considered indigenous trees on Chimono and in the province of Mino. In this province, on the Nagasendo, below Nakatsu-gawa, we saw young plants of the Kôya-maki in all the road-side gardens, a pretty sure indication in this remote region that the tree was growing in the woods not very far off, and here for the next two or three days we saw it sending up its narrow pyramidal heads above the Pines and other trees of the forest, growing, as we thought quite naturally, and leading us to believe that we had found the true home of this tree, although in a country like Japan, which has been densely populated for centuries, and in which tree-planting has been a recognized industry for more than a thousand years, it is not easy to determine whether a forest has been planted by man or not. But whether these trees had been planted or whether they were the offspring of trees brought from some other region, or the indigenous inhabitants of the forest, the Sciadopitys grows on the mountains of Mino in countless thousands, often rising with tall straight trunks to the height of nearly a hundred feet, and remarkable in their narrow, compact, pyramidal heads of dark and lustrous foliage. The wood, which is nearly white, strong and straight-grained, is a regular article of commerce in this part of Japan, and from Nakatsu-gawa is floated in rafts down the Kiosa-gawa to Osaka, where it is said to be chiefly consumed. Except in the neighborhood of Nakatsu-gawa, the Sciadopitys is not very much cultivated as a garden-plant in Japan; and it is not often found in old gardens, except in the immediate neighborhood of temples, where picturesque old specimens may occasionally be seen occupying a place of honor within the fence which encloses the principal buildings, and carefully protected by low stone railings. There is a remarkable specimen with pendulous branches standbefore one of the mortuary temples in the Shiba Park in Tôkyô.

C. S. S.

Plant Notes.

The Chinese Red Bud in America.

OUR American Red Bud, Cercis Canadensis, in early spring, when the leafless branches are covered with the crowded clusters of purple and red pea-shaped flowers, is one of the most beautiful objects in the forest, especially in some parts of the southern states, where these plants are so abundant that in the flowering season they light up the whole landscape. The American species, like its European relative, the Judas-tree, are small trees, but the only Chinese species which has as yet been brought into our gardens is a shrub. Some idea of its habit and of the size to which it grows under favorable conditions here, can be obtained from an examination of the illustration on page 476 of this issue, which represents a plant in a garden in Flushing, in this state. It is probably one of the first specimens of Cercis Chinensis ever raised in America, and it is larger than any other we have seen.

Only a shrub in size, the Chinese Cercis produces more beautifully colored flowers than either the American or European species; it is one of the most distinct and attractive of early spring-flowering shrubs, and should, therefore, find a place in every garden where the climate is not too severe for it. The leaves, too, are a rich glossy green, so that it is a desirable plant all summer long. It is perfectly at home in the middle states, and in Fairmount Park, in Philadelphia, a number of excellent specimens may be found, but north of this latitude it is not very reliable, and in eastern Massachusetts it rarely flowers and is usually killed in severe winters.

Although a native of China, and not of Japan, this plant is often spoken of here as the Japanese Cercis, owing to the fact that it was first brought to this country from Japan, where, like many other Chinese plants, it is often found in gardens.

Foreign Correspondence.

London Letter.

An Interesting Nursery.—I spent a most enjoyable hour yesterday in looking through the famous Swanley Nursery with Mr. Cannell, whose geniality, energy and genuine love of his work are, in a way, as remarkable as many of the flowers he produces. The end of October is not a good time in the garden, still the Begonias, though nearly over, are truly wonderful in color, size and what Mr. Cannell calls perfection of form. The tubers were all being lifted and placed in houses on cinder bottoms to ripen and dry before being sorted for export. "I send away about a hundred thousand yearly," said Mr. Cannell; "not many to America now because of the duty on all packages over eight ounces, although I send plenty of them." I saw the packing-sheds, and learned something of the skillful manner of packing which enables Mr. Cannell to send plants all over the world with success. Some cases filled with Strawberries, Rhododendrons and other plants were just starting for New Zealand. The plants were fastened firmly on their sides in boxes, and the lid was a sheet of stout perforated zinc with a few battens across to protect it.

The Zonal Pelargoniums were a magnificent show, house after house filled with thousands of plants in five or six inch pots, the foliage healthy, the trusses of bloom numerous and large, while the colors ranged from snow-white to deep crimson, scarlet, magenta, and, as Mr. Cannell described it, "very nearly true blue. We mean to get a perfect blue-flowered one, and see we are getting on; this is one we call Blue Peter." It is bluish, or, rather, very deep magenta, dazzling enough, but not a favorite with the ladies. Mr. Cannell has two-inch hot-water pipes running along the beds, level with and touching the leaves of the Pelargoniums, and hot even on a sunny afternoon. The secret of success with these plants, Mr. Cannell said, is to grow them in a dry atmosphere, when they will produce flowers that will

last and be a credit. These hot-water pipes keep the atmosphere in the houses buoyant and dry, and this is what Pelargoniums like in winter. The conditions may be described as precisely those of a Cactus-house. It is impossible to make a more brilliant flower-picture in October—indeed, one might say at any time of year—than this of Pelargoniums, as grown by Mr. Cannell, and it will improve week by week until Christmas. The new semi-double Raspael Improved, a crimson, with enormous trusses of flowers, is represented by thousands, and the same is true of the remarkable red and white New Life, which Mr. Cannell expects to become a universal favorite. The tricolor-leaved Pelargoniums are also largely grown by Mr. Cannell.

"Chrysanthemums are coming on, and will soon require all the attention we can give them." "Yes, plenty of new ones, but nothing yet to beat Edward Molyneux, the finest type of Chrysanthemum in all points." "We send little Chrysanthemum-plants everywhere, even to China and Japan." "Emphatically a poor man's plant, for he can grow it well in his yard, flower it in a shed with the door open, and keep it in any corner till the summer comes again." "We have over fourteen hundred named sorts, and we are even now asked for sorts which we do not possess." These were Mr. Cannell's remarks as he hurried us through the houses. Carnations of all kinds, with a special position for one named Mrs. Cannell, a variety with the sturdy growth and size of flower of Malmaison, but colored rich magenta-pink. Mr. Cannell evidently has a weakness for magenta. A house filled with an endless variety of Coleus, which Mr. Cannell says find plenty of admirers, harsh though their colors are considered by some. Vesuvius is a brilliant red and yellow, large-leaved variety, which is likely to become a favorite for summer bedding, and The Shah is a singular dwarf, small-leaved variety, the lower half of the leaf colored crimson, the upper half, yellow. We rushed through four acres of Dahlias to look at some of the new ones admired by Mr. Cannell, and I set down the names of Maid of Kent, Robert Cannell, Colose, J. Abrey and Marguerite as varieties of sufficient distinctness and beauty to please my taste. "All the neighbors who care to are allowed to come in and help themselves to Dahlia-flowers," said Mr. Cannell. Of course, the names of the varieties are legion, and they appear to be all represented at Swanley, and Mr. Cannell appears to know the history of every one of them. A house filled with Cacti, Agaves and other succulent plants was of exceptional interest—a good collection, well grown and evidently cared for by Mr. Cannell, who stands alone as a florist among thousands in his combining a florist's feeling with a love for Cacti. Herbaceous plants by the acre, most of them at or going to rest now, but bearing plenty of evidences of their health and sturdiness even now. Over at Eynsford, in a valley on the estate of Sir William Hart-Dyke, Mr. Cannell has started another nursery and farm, which in a few years, under Mr. Cannell's energy, is certain to become a much more attractive "Home of Flowers" than that at Swanley. The new nursery is surrounded by a range of hills, and appears to be well suited for the cultivation of all kinds of plants to which chalk is not distasteful.

Chelsea Botanic Garden.—It is rumored that this ancient "Physic Garden" is to be handed over to the builder, the Apothecaries' Society having no further need of it as a teaching-school of botany for young "medicos." The garden is the oldest in the metropolis, and it is famous as the workshop of Philip Miller, Peliver, Rand and other botanists of the seventeenth century. It covers an area of about four acres by the side of the Thames, at the end of Cheyne Walk, Chelsea. The contents of the garden are not of any special interest, beyond a few old specimen trees, including one of the oldest Cedars of Lebanon in Europe. The land was granted to the Apothecaries' Society by Sir Hans Sloane in 1722 at a nominal yearly rental on condition that it be used as a physic garden to enable students to distinguish the good and useful plants from the hurtful and "for the manifestation of the power, wisdom and glory of God." It has been suggested that in the event of the Apothecaries' Society desiring to be relieved of the burden of maintaining such a garden, it might well be kept up as an educational instrument for fostering the study of botany, and if properly managed it could be made of sufficient public utility as to justify the London County Council in keeping it up for educational purposes. At Kew, the demand for facilities for the study of systematic botany by the public has grown to such an extent in recent years that a special garden, known as the "Students' Garden," has been set apart for the use of bona fide students, who are allowed to collect specimens and examine them unmolested by the crowds that visit the garden proper. Should the London County Council decline to interest itself in the Chelsea Garden, one might hope that rather than permit this historically interesting and educationally useful place to become obliterated by the builder, the Government might be induced to interest itself in the maintenance of the garden as a supplement to Kew. This latter establishment is in some degree an offshoot from the Chelsea Garden, for we read that "in 1759 William Aiton, who had been a pupil of Philip Miller, at the Physic Garden, Chelsea, was engaged by the Dowager Princess to establish at Kew a Botanic, or as it was then called, a Physic Garden." The only objection to this scheme would be, that owing to the smoke and poison-polluted atmosphere of Chelsea by the river, it would not be possible to keep many plants in health there. Indeed, the trees and other plants there now show evidences of injury from impure air. Still the fittest might be grown there. We cannot afford to relinquish town gardens because of the unfavorable conditions consequent upon the growth of the towns, or it would not be difficult to show that most of our most useful gardens, even Kew itself, cannot be maintained as gardens many more years!

London. *W. Watson.*

Cultural Department.

Grapes under Glass.

THERE is a general impression that to grow grapes of the highest quality under glass, one must have specially constructed and expensive houses with all the latest improvements; but the fact is, that vines under glass do not have to contend with such serious dangers as threaten those out-of-doors, and there is hardly any fruit which can be produced with greater ease and certainty than hot-house grapes, if the proper varieties are selected and proper care is exercised. A chapter from my own experience may be encouraging on this point.

Four years ago it was my fortune to have a block of modern greenhouses erected for growing plants and flowers, to replace old and dilapidated ones which were to be torn down when the new ones were ready for use. As the work went on it was difficult to decide what to do on the site of the old houses which stood on the hill-side, with a twelve-inch wall at their back supporting four feet of soil and gravel. Our outdoor grapes had suffered much from mildew and black-rot, and as we had no grapes under glass, the thought came to me that the old greenhouse might be used for Vines. This old house could not be styled a plant-house, and no one would ever construct such a building for the purpose of growing grapes, but it was the only available house, and I set to work to make it as convenient as possible. It was a hip-roof structure, thirty-eight feet long by twelve wide, facing the south-west. At the ridge it was eight feet high, front sash three feet high, and being built when timber was cheap the rafters were five inches by six in size, had been set three feet and eight inches apart. The sashes were correspondingly heavy, glazed with seven and three-eighths by twelve-inch glass, and the shorter sashes in the rear were glazed with ribbed glass. Of course, so much timber and thick glass obscured the light and was very different from a modern grapery; besides, there was a small house at the south-east end of it which cut off the rays of the morning sun.

I first made a border inside of the house by digging out the soil to a depth of eighteen inches, side walls were built and a concrete-bottom laid, and four inches of broken brick, the most available material on hand, was used for drainage. As no sod was available, a covering of cinders, free from ashes, was used on top of the brick to prevent the soil

from washing through and keep the drainage open. At the lower end a piece of ordinary greenhouse heating-pipe was used as an outlet, built into the wall so as to allow free flow when copious waterings were given. For this border a good loam made of sod, previously stacked, was used with a sprinkling of coarse bone-meal, and the soil was twelve inches deep after it had settled, exclusive of the drainage.

In April, 1890, I planted five vines of Black Hamburg, two of Foster's White, one of Gros Morac and one Sweet-water. Wires were fastened to each rafter with long galvanized eye-screws with a parallel wire on either side, sixteen inches from the glass and fourteen inches from the centre of the rafter. No greater distance from the glass could be given, as otherwise the door which opened into the house would strike the wire. The vines were planted under each rafter, and as they were started at this time the shoots were rubbed off to a point where the vines were afterward cut, with no danger of bleeding when the leaves were produced. They made a growth which was yet short-jointed and solid, and in July they had reached the top of the house and were sending out laterals. Being pinched at the top, the laterals also made very strong growth. In autumn a temporary bench was made in the middle of the house and a permanent one at the back of it, with shelving above the bench, and all were filled with a stock of Chrysanthemums and bedding-plants. The first year the vines matured some splendid canes, and about the 1st of January were pruned back. The strongest canes were left ten feet long, the others six, while the laterals were cut close, leaving one eye. The minimum temperature during the winter was from forty to forty-five degrees. The Chrysanthemums occupied the house until they were planted outdoors in the spring, when the temporary bench was taken down, and the border received a top-dressing of good loam mixed with well-decomposed cow-manure. Every vine broke strong and showed two or three bunches on each lateral, and the strongest ones were allowed to carry ten or twelve bunches each, according to their strength, and the laterals were pinched to the third eye beyond the bunch. This allowed them to meet those of the next vine, but not to crowd the foliage, and the sub-laterals were allowed but one leaf, but each leaf had sufficient space and light for free development. The vines which had been cut back soon reached the top of the house again, when they were pinched, and the laterals were also pinched to prevent crowding, and the entire roof was covered by the end of June. Liberal soakings of water were given at intervals after the Chrysanthemums were cleared out, and diluted liquid-manure from the stable-cistern was added after the grapes had stoned. They ripened in the latter part of August, sixteen months from the time of planting, and about one hundred pounds were cut from the vines this season. Before the grapes were cut the house was again filled with stock-plants for another season, including some Musas and the like. The laterals were then cut half-way back to admit light, and the same course was pursued this winter as before.

In January, pruning on the short-spur system was done, and one or two eyes left, according to the condition of the wood, such new canes as had made laterals being cut to one eye. During the winter the house was kept at a temperature with a minimum of forty-five to forty degrees, and in March the vines at the warmest end of the house had started into growth. As

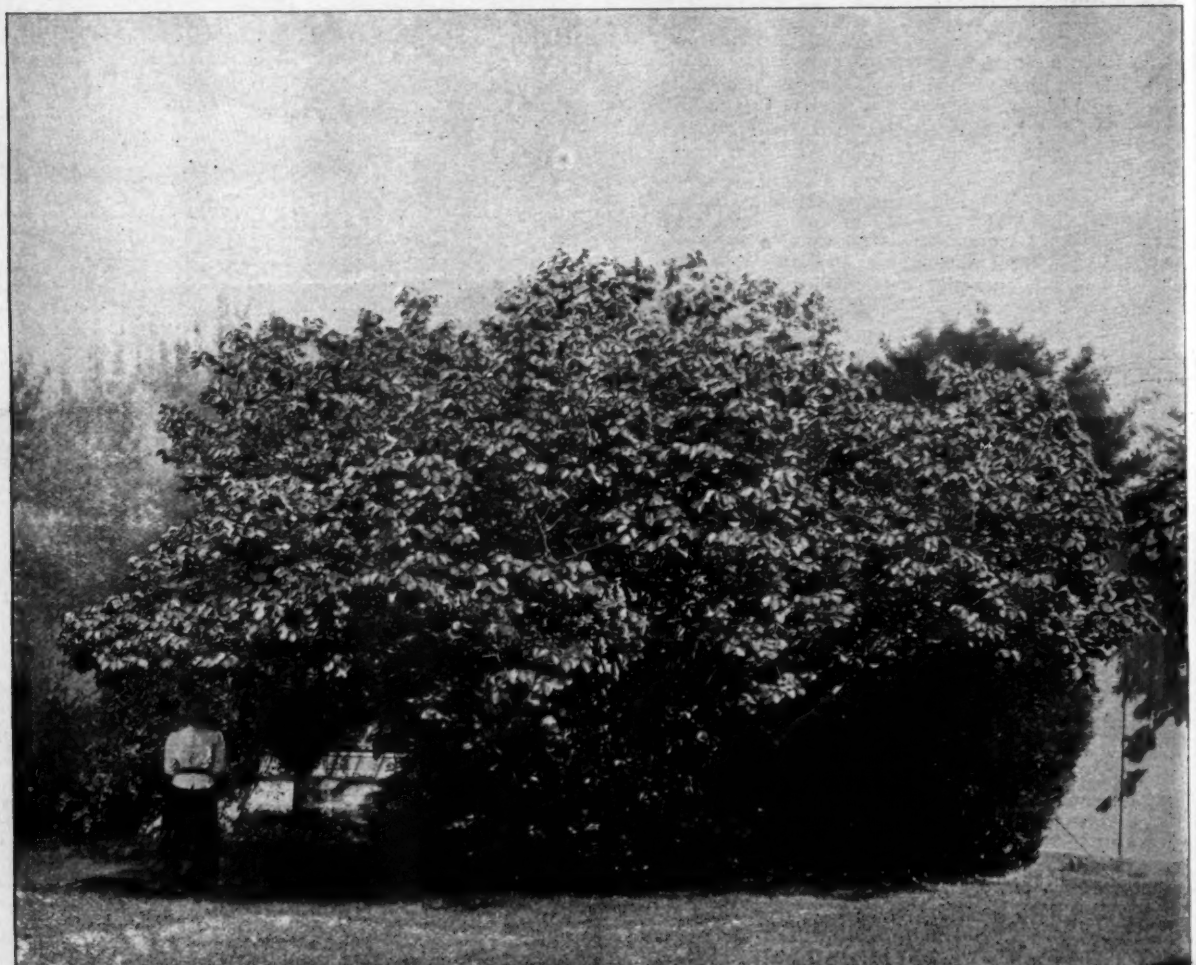

Fig. 69.—Chinese Cercis in Flushing, Long Island.—See page 474.

the temperature increased with the lengthening days and sunheat no syringing was done, the moisture necessary for the plant being sufficient. Disbudding was attended to early, reserving the strongest, which were allowed to grow until the bunches could be selected and the laterals pinched back before it was necessary to tie them loosely to the wires, so as to keep them from touching the glass. As the grapes increased in size their weight brought the laterals down to the wires. In this way no laterals were broken off, as is the case if they are tied down early, when the young growth is brittle. Bunches were thinned out early in May, as soon as the berries could be discerned, as they swell very rapidly at this stage, and when there is much other garden-work out-of-doors it is well to have this thinning out of the way when there is opportunity for it.

This is a critical stage in the growth of the crop, and it is necessary to attend strictly to ventilation and the condition of the house generally, especially if it is occupied by bedding and other plants, and the vines must have attention at the expense of everything else, for if the vines have any set-back now the crop is certain to be damaged. The bedding-plants are apt to suffer in a heat in which the vines would revel, and the red spider is almost sure to appear on plants which ought to be in a lower temperature and have more ventilation. If the plants are attacked by the spider, the probability is that the vines will also be attacked, and this will make trouble. At such times syringing with clean water must be attended to for suppressing the spider, and the house must be cleared of its temporary occupants at the earliest possible opportunity. Syringing and damping must also be judiciously done, and the régime must be varied to suit the weather, or mildew will appear and is certain to leave its mark on the vines and the fruit. Bad ventilation and excessive moisture favor the spread of mildew. Air should be admitted early in the day, especially on bright sunny mornings when the sun strikes the glass at sunrise, or the temperature will make a rapid rise. In case the ventilators are then thrown open a cold current will be admitted, and, perhaps, a draft, which will cause a chill to the vines, and this may result in the grapes becoming rusted, or the tips of the young growth may shrivel as if scorched, and, later on, the berries may split or crack and fall off. Ventilation should always be given at the ridge, or top of the house, and drafts of cold air should be carefully guarded against. No bottom ventilation is necessary, as a rule, but when the grapes are coloring a free circulation of air is needed, and at this season of the year it is better to leave some air on all night. After thinning, grapes swell rapidly, and the borders should have copious waterings and occasionally liquid-manure.

Last season, after the grapes had stoned and commenced to color, I had an experience which was new to me. Near the grapery is an orchard, and the back wall of the grapery and the buildings adjacent are covered with Ampelopsis Veitchii. The Ampelopsis as well as the Apple-trees were infested with a white fly similar to thrips, only larger, and at a later stage they assumed a brown color. These flies gained an entrance into the grapery through the ventilators and could not be dislodged. They ate the leaves on the under side, just as thrips attack plants, only more viciously. The vines had been in perfect health and condition, and the new wood had commenced to ripen, but in spite of my efforts the flies were master of the situation. The vines were heavily cropped, and although the fruit was ripe and of good size, the injury to the foliage affected the color of the grapes. Several of the bunches weighed three pounds each, and two hundred and fifty pounds were cut from the vines.

The same course was again pursued last fall, the house filled with plants, the vines pruned as before, and no scrubbing, scraping or insecticide of any kind applied. The usual dressing was given to the border, and two of the vines—one Sweetwater and Gros Morac—not fruiting as well the others, were cut out. The remaining vines broke strong in March throughout the entire house, and no bad effects of the insect attack of last year was noticeable until the season of the previous attack came round when a few of the flies appeared. I laid tobacco-stems the whole length of the house and more than half the breadth of the border. This seemed to be effectual, although another application was made later, as the stems had to be kept dry. This time I covered the bench with stems, and no insects have been seen since. The crop this year averaged fifty pounds to a vine; the bunches were of uniform size and the berries of good size, several measuring four inches in circumference, and they presented that hammered appearance and deep bloom so much prized by connoisseurs. Not a single shanked berry was seen. I have just finished cutting the crop. The laterals are now half-cut, and the wood is in prime condition, better, if possible, than it was last year. In the place of the vines cut out another rod has been trained from adjacent Black Hamburg vines, the vacancy has already filled and the new canes will be fruited next year.

Dongan Hills, N. Y. *Wm. Tricker.*

Some Work of the Season.

BULBS for indoor use should be planted at once, in readiness for forcing, as a steady succession of plants is required to furnish a variety of flowers for the dwelling and the conservatory. Roman and Dutch Hyacinths, Tulips, Narcissi in variety, Freesias, Ixias and Gladiolus Colvillei are among the most useful, and are all reasonably easy to force. Tulips, Narcissus and Freesias are more ornamental for conservatory decoration when grown in groups in a pan or pot, from half a dozen to a dozen of the Tulips and Narcissus and about twenty-five of the Freesias. Bulbs of this character should be well-rooted before they are brought into the heat. This can best be secured by placing the pans or pots in a frame and covering them with three or four inches of ashes or soil, so as to keep them in a cool and moist condition.

Lily-of-the-valley should also be planted now, in clumps for pot culture; while the divided pips are the most satisfactory for cut-flowers; these may be planted either in pans or in shallow boxes, as is most convenient. If the roots of the Lily-of-the-valley are dry and shriveled when received, it is a good plan to soak them for a few hours before planting, and this tends to start them more evenly.

Lilium Harrisii, grown for winter flowers, should now have an abundance of light and heat, a night temperature of seventy degrees being none too high. It is surprising how much heat L. Harrisii and L. longiflorum will endure when it is remembered that they are natives of a temperate clime, and almost hardy here; but when hurried to finish an Easter crop of these Lilies, I have grown them at 85 to 90 degrees at night and 115 to 120 degrees during the day, and still turned out good flowers, by subjecting them to a hardening process in a cold-house after they had started to open. It is, however, much better practice to begin the operation in time and to grow them on steadily, rather than subject them to this extremely high-pressure method. Aphis on the Lilies should be promptly eradicated by a dipping or syringing of tobacco-water. This method is more agreeable to use in a conservatory attached to a dwelling than fumigating them, and is quite as effective.

The various summer bulbs, among which the Caladiums, Gloxinias, Tuberous Begonias, Achimenes and Tydias are prominent, have almost all finished their growth by this time, and may be put into winter quarters. The best method is to shake them out clean and put them in boxes or pots of dry sand and store them in a nearly dry place under the stages; this operation is to be performed as soon as the foliage dies off.

Primroses deserve a place in every conservatory; P. Japonica is one that should not be forgotten, its tall spikes of flowers produced in successive whorls being quite showy and variable in color, ranging from crimson to almost white. The Chinese Primroses are well recognized now as house-plants, and include a great variety of colorings, while the common English Primrose can also be forced quite readily.

Violets in frames and houses will soon be coming into flower, and will require free ventilation just as long as the weather will permit. A night temperature of thirty-eight to forty degrees generally gives the best results, though some varieties submit to higher temperature without material injury.

Holmesburg, Pa. *W. H. Taplin.*

Epidendrum radicans.—This species, the most beautiful of its section, if not, indeed, of the whole genus, is not considered easy to flower by some growers, and partly on this account it is not often seen. There is no difficulty, however, about growing the plant, and it is really one of the easiest and quickest of Orchids to grow and increase. On the 20th of February, 1891, a small branch or cutting was obtained, which has developed into a plant that now has seven growths that are showing flower-spikes, with many other secondary ones that should flower another season. Epidendrum radicans is a native of Guatemala, where it grows among long grass in full exposure to the sun, so it seemed perfectly rational to place the plant in the Rose-house at the end, where it would get the full benefit of the sunshine all summer, with frequent syringing in hot weather. This treatment was evidently agreeable, but smaller plants should be placed in a warmer house the first year, to induce rapid growth, as they should have some size before being placed in the sun. This species does not form bulbs as other Epidendrums do, but the slender stems grow upward for about four feet, roots being sent out from below

each pair of leaves, which grow downward until they reach the sphagnum growing on the surface of the pot. The roots then strike deep into the potting material and hold the plant in position, so that in appearance it is always striking to the most uninterested observer. But when the large heads of brilliant scarlet flowers are produced there are few Orchids that surpass this Epidendrum in brilliance of display. It is also known as E. rhizopharum.

South Lancaster, Mass. *E. O. O.*

Exhibitions.

The New York Chrysanthemum Show.

THE annual Chrysanthemum Show of the New York Florists' Club was opened Monday, November 6th, in the main hall of the New York Industrial Building, in Lexington Avenue and Forty-third Street. This is a mammoth new building lately erected for exhibition purposes. It has on the main floor ample space, without the lofty roof and great tiers of seats which always detracted from the flower-shows at the Madison Square Garden, as their lines were beyond the efforts of the decorator to hide. Entering the wide portal of the building, which was marked by a profusion of evergreens, and ascending a few steps, one entered what at first seemed a fine hall with high cylindrical glass roof. Within the lines of this space were massed on either side great banks of Chrysanthemums with backgrounds of foliage. At either side of the door were handsome stove-plants, while in the centre space, irregularly disposed, were beds of Lilies-of-the-valley, two large groups of Palms, others of Crotons, and single specimens of Tree Ferns, Palms, etc., with numerous specimen Chrysanthemum-plants. A closer inspection showed that this hall was only a central space from which wide side spaces with lower ceilings extended on either side to the side walls of the building, which occupies a city block of fair size. As these side spaces were well lighted, they proved to be capital places on the one side for cut Chrysanthemum-blooms, on the other for the Orchids, Carnations and miscellaneous plants, with sufficient room for all exhibits. No flower-show previously given in New York, with, perhaps, the exception of that in the Lenox Lyceum three years ago, has been so well arranged for the enjoyment of visitors, groupings being well done and exhibits being arranged without confusion. As the Chrysanthemum shows in our principal cities were all held this year during the same week the exhibits were all local, and it is a pleasure to say that the local growers have fully maintained their reputation, and, in fact, have scored an advance.

For specimen Chrysanthemum-plants the prizes went to Pitcher & Manda. Mr. William Bayard Cutting was awarded $150.00 premium for the best group of 300 square feet, and one of $50.00 for one of 100 square feet of well-flowered plants. J. Roehrs had, besides others, a prize for twenty-five bush-plants in six-inch pots. These were dwarf, usually with three good flowers, and were especially well grown, the flowers preserving their freshness through the week. Dailledouze Brothers took the majority of prizes for cut blooms in vases and on boards, other prize-winners being J. L. Powell, J. N. May, A. W. Elkstrom and J. Condon. The best vase of twelve white flowers was J. N. May's Queen, a white incurved flower of perfect purity. The Viviand Morel and Ada H. Le Roy were the prize-taking pink flowers in two competitions, in vases of twelve, as were Golden Wedding and William H. Lincoln in yellows. A new crimson imported by J. N. May had the premium for this color, while Harry May was to the front again as first of any other color. The sets of six vases with twelve flowers of each variety in each vase, and twelve vases with six flowers of each variety in each (Dailledouze winner in the latter, and J. L. Powell in the former), were better than before shown here, the blooms being generally very massive, well colored and finished and uniform. In this section the best flowers were Niveus, Mrs. Craig Lippincott, Minnie Wanamaker, Ivory, Maud Dean, Harry Widener, Colonel William B. Smith, Mrs. Irving Clarke, E. Hitzeroth, Harry May, Marie Simpson, Roslyn and Good Gracious. The special prize for the best six flowers of any color was won with Niveus, and the twenty-five flowers of Golden Wedding which won a special prize offered by Peter Henderson & Co. were quite up to last year's standard. They were exhibited by J. L. Powell.

For flowers shown on boards, Dailledouze Brothers took first premium for best forty-eight, best twelve, and best twelve Japanese, J. Condon being first for best twenty-four varieties, with only four exhibitors in each section. The best twelve comprised Golden Gate, Mrs. Senator Hearst, Excellent, Queen, Mrs. Craig Lippincott, Colonel William B. Smith, Viviand Morel, Mrs. William Bayard Cutting, Joey Hill, W. G. Newell, Edward Hatch, Miss Libby Allen. Prizes for Chrysanthemums shown on stems with foliage were given to Pitcher & Manda, Peter Henderson & Co. and J. L. Powell. They were shown in great variety, and generally in well-finished blooms.

A table decoration in white Ivory Chrysanthemums took the first prize for W. A. Brower & Sons, its competitor in pink being considered rather too massive and overdone.

Pitcher & Manda made an especially fine display of Cypripediums and miscellaneous Orchids, for which they took first premiums. Mr. J. E. Brown, of Bellport, Long Island, had a fine specimen plant of Cattleya labiata, of rich color. Lahning & Winnefeld, of Hackensack, New Jersey, made a display of Cyclamens, well-flowered for the season. F. Sanders & Son, London, have a silver medal for a new foliage-plant, Strobilanthus Dyerianus. H. W. Wipperman gained first prize for a large group of Palms. Mr. J. B. Colgate, of Yonkers, showed well-colored groups of Crotons and handsome Marantas. Mr. J. B. Keller and Pitcher & Manda divided the honors in a bed of handsome Dracænas. Mr. J. E. Brown's semicircular bed of foliage-plants was one of the main attractions, being especially brightened by finely colored specimens of Alocasia Macrorhiza. From the Oasis Nursery Company were fine flowers of hybrid tuberous Begonias, single and double. Roses were not in great profusion. Meteors were fine. Madame Testout was in better form than before shown, and Mrs. William Whitney gained a silver medal for Mr. May. Carnations were well shown in many handsome specimens, Daybreak, Lizzie McGowan, Edna Craig, Buttercup and Portia being leading kinds. Further notice of the exhibition will be given next week.

Chrysanthemums in Boston.

THE Chrysanthemum Show at Boston, last week, was the best one ever held by the Massachusetts Horticultural Society, and while improvement was seen in every class, it was especially strong in specimen plants. What is the reason that New York exhibitions are always inferior to those of Boston and Philadelphia in this respect? We never have seen in this city anything like the collections of twelve named plants in the three prize-winning groups shown by Walter Hunnewell, N. T. Kidder and Arthur Hunnewell. The general advance in skill among gardeners was well shown in all these plants, for although the plants which won first prize were better than any before grown by Mr. T. D. Hatfield, who for some years has carried off the honors as a cultivator, those in the second group followed hard after his, and those in the third were close upon the second. They were all marvelous plants, and some of them showed a finish which is rarely equaled. Some judges considered the best plant in the hall to be one of Louis Boehmer, in Mr. Kidder's collection, but a specimen of Ivory, in a collection of six shown by Walter Hunnewell, although not very large, was a remarkably well-grown, compact and short-jointed plant.

Of course, there were wonders in the way of long-stemmed cut-flowers, perhaps the best being a vase of Mrs. Jerome Jones, with remarkable large dark green foliage, showing that the plants had been hurried forward in a short time. They were shown by Mr. John Simpkins, and his gardener, James Brydon, deserves mention, not only for his skill with these plants, but for the great mass of mixed blooms on long stems in one of the five large vases of the Society, as well as for the exhibit of flowers of six Japanese varieties, six incurved varieties and twelve Japanese varieties, each of which won a first prize. Among other cut flowers, vases of Golden Wedding, Niveus, Joey Hill, Harry May and Harry Balsley, exhibited by E. M. Wood & Co., of Natick, were all notably good, and so was the vase of Viviand Morel, which took the Simpkins' cup. C. V. Whitten took the Hatch prize for the best yellow Chrysanthemum with William H. Lincoln.

Among the seedlings the first prize for a red one was taken by Mr. J. H. White for a distinct but unnamed mahogany-colored variety, which was decidedly good. The best of the whites was considered Mutual Friend, shown by Mann Brothers. T. D. Hatfield showed the best pink, called Peach Blossom, which is in the way of V. H. Hallock. Mr. Hatfield also showed the best yellow in A. H. Fewkes, which is a grand flower in the style of W. H. Lincoln, but it appeared to be even better than that standard variety. Another distinct seedling was shown by James Brydon, named Portia, a very pale pink of exquisite form; Pitcher & Manda, the new flower named after its originators and described last week in these columns, received a special prize.

Among the miscellaneous exhibits was a fine yellow seedling Canna, similar to Florence Vaughan, and shown by A. H.

Fewkes, while Rea Brothers deserved the first-class certificate they received for the true Aster grandiflorus, one of the most desirable of hardy Asters, with large dark blue flowers. An exhibit of skeletonized leaves and seed-vessels from J. F. Huss, of Lenox, Massachusetts, was remarkably good and clearly showed the decorative possibilities in material of this kind. Some admirable Carnations, new and old, were exhibited. The new Ada Byron, shown by Mr. Nicholson, of Framingham, and Helen Keller, white, splashed with crimson, shown by John N. May, of Summit, New Jersey, were especially good.

Besides the persons already named, Joseph H. White, Elijah A. Wood, E. S. Converse, Mrs. A. O. Wood, Dr. C. G. Weld and Dr. H. P. Walcott took important prizes for Chrysanthemums. David Allen was awarded for Orchids, and Joseph Tailby for Callas. W. H. Elliott took first prize for a group of plants arranged for effect. The flowers were bright, almost glaring, in color, but not so carefully arranged as to harmony and contrast of color as the exhibit of the Bussey Institute, which took second prize in this class.

Chrysanthemums at Philadelphia.

AS usual, specimen plants were quite the best feature in the exhibition of the Pennsylvania Horticultural Society, held in Philadelphia last week, and they maintained in every respect that high standard of excellence in size, cultivation and finish which has always characterized plants shown here. For the collection of ten plants, ten varieties, James Verner, gardener to the late A. J. Drexel, again received first premium. One of these plants, Mrs. Irving Clark, was fully six feet in height and eight feet in diameter, and the other nine were but little inferior in size, being remarkably even in this respect. A specimen of Hicks Arnold showed no less than two hundred blooms, and other varieties in this collection were Robert Bottomley, Puritan, W. H. Lincoln, the white Edna Prass, Mrs. J. W. Paul, Jr., Mrs. A. J. Drexel, Frank Thomson and Black Beauty. In the same class Emil Leiker secured second premium with sturdy, well-grown, medium-sized plants, among which Louis Boehmer, just opening, showed its color to excellent advantage. Mrs. Irving Clark was also in this collection. This highly popular flower in Philadelphia is considered quite indispensable by growers for cutting, and is of easy cultivation. Cullingfordi, Domination or Mrs. George Bullock, and Mrs. William Bowen and Violet Rose, the last two seedlings of W. K. Harris, were among this ten. Gordon Smirl, gardener to Joseph F. Sinnott, received third premium in this class for a notably good exhibit. Henry D. Surnam, gardener to E. W. Clark, won first premium for a collection of six new varieties never before exhibited at the shows of the society. These were all white or light pink. John McCleary took second premium. A good pink seedling grown by C. W. Cox, gardener to Clay Kemble, was declared the best specimen plant, new variety, never before exhibited at the shows of this society. W. K. Harris' twenty-five plants, twenty-five varieties, made a bright show and gained first premium. These included Miss Eva Hoyt, Mrs. Irving Clark, W. H. Lincoln, J. J. Bailey, the best white in the group, and Advance, a seedling of Mr. Harris', and one of the best early pinks. The second prize for a similar collection went to Emil Leiker. Robert Bottomley was declared the best specimen plant of white, W. H. Lincoln the best plant of yellow, and Hicks Arnold won first prize in the competition for any other color, James Verner and Emil Leiker winning the highest prizes in these three classes. The best four plants, four colors, were specimens of Mr. George W. Childs, Roslyn, L. C. Madeira and Edna Prass, grown by James Verner, and H. G. Standen won second prize. The best seedling plant, winner of the society's prize, was a rich creamy white, incurved, grown by William Jamison, gardener to R. S. Mason, and the same grower received the Sugar-loaf prize for the best seedling never before shown.

A special premium, the Wootton prize, offered by Mrs. George W. Childs, for three varieties, three different colors, was awarded James Verner, for plants of George W. Childs, Kioto and Robert Bottomley, Emil Leiker also taking a premium for a like exhibit. The Pembroke prize, for four varieties of the Japanese type, four different colors, was won by James Verner, Kioto and Robert Bottomley again appearing. For six naturally-grown plants, six varieties, Gordon Smirl took first premium. John McCleary showed the best plant, and twelve cut blooms of Miss Maria Weightman. Sixty blooms, five varieties, twelve of each kind, were shown by Hugh Graham and Frederick R. Sykes, who took first and second premiums. These exhibits were notably good, and excellent flowers of the new Katherine Leech, Edward Hatch, Colonel William B. Smith, Harry May, Mrs. Irving Clark, T. H. Spalding and the very deep red Mrs. Robert C. Ogden were seen. The three best plants of yellow were Kioto, Miss Maria Simpson and W. H. Lincoln.

Among the cut flowers, Ferdinand Heck, gardener to George F. Baer, of Reading, Pennsylvania, made a sensation with fifty-two blooms, one of a kind. Each flower had its name or seedling number attached to it, a detail which always adds to the interest of an exhibit, and one too often neglected here. The largest flower in the hall, a bloom of Golden Wedding, was in this collection, and Roslyn showed well, as also Harry May, Frank Thomson and Seedling No. 2, a large, incurved flower of a deep pink color. For twenty-five blooms, one of a kind, Ferdinand Heck again took first premium. To Golden Wedding first premium was awarded as the best vase of twelve blooms of yellow, one variety, W. H. Lincoln taking second and third prize. Ivory won in a similar competition among the white flowers, and there were good flowers of Queen and Niveus shown. A vase of pink flowers, shown by Edwin Lonsdale, was awarded first premium, the variety being Erminelda, very large and a rich pink. Among the most striking and best cut flowers were vases of fifty pink and fifty yellow, shown by Edwin Lonsdale. The stems of these were four feet long, and the broad-petaled, luxuriant, riotous-looking Harry Balsley, and especially large flowers of Mrs. Craig Lippincott, made a marvelous display. For white in this class, Ivory was the best, shown by Joseph Heacock.

John N. May took the prize for the best twelve blooms of any variety not disseminated, with William Simpson. The silver cup offered for best seventy-five cut blooms, twenty-five varieties, three of a kind, was won by Joseph Heacock, excellent varieties being Mrs. Frank Thomson, Mrs. Craig Lippincott and H. E. Spaulding. Mrs. James W. Paul, Jr., new last year, was seen in many collections and always to advantage. For the new seedling Dr. Herbert M. Howe, a certificate of merit was awarded to Henry G. Surnam, gardener to Mr. E. W. Clark. The flowers are of fine "Elkhorn" form and good pink color. Mrs. W. A. Reed, shown by the same grower, received a silver medal, and is an orange-yellow of the Golden Ball type. John McCleary, gardener to William Weightman, received special mention for a light pink seedling about the color of Daybreak Carnation, with reflexed drooping florets. Katherine Leech, a new flower of much merit, a good pink and well formed, shown by Hugh Graham, won a certificate of merit, as did also J. N. May with Seedling No. 333, a large yellow of good color and form, with fine foliage. Mrs. Higginbotham, a very large pink, shown by E. G. Hill & Co., gained similar distinction. Bellevue and Mrs. Charles L. Sharpless were two good white seedlings from Hugh Graham, which received special mention. Of the pink seedling Helen J. Joyce, almost identical with Viviand Morel, honorable mention was made. One of the best seedlings seen here was Eugene Dailledouze, from E. G. Hill, winner of the Blanc prize and a certificate of merit. This variety is a good clear yellow, the broad petals regularly incurved; the flowers are flat and last well. Mrs. E. G. Hill, not in competition, received a certificate of merit; also Annie Monahan, exhibited by Thomas Monahan, a large incurved dark rose, altogether excellent in size and form.

In the wide range of varieties noted in the show many of the older kinds were scarce. There was but one flower each of Mrs. J. N. Gerard and of Good Gracious, both seen in large numbers at the New York Show, and the promising seedlings of last year, Miss Sue T. Price and George W. Childs Drexel, were not shown at all.

In the display of Roses, Pennock Brothers and John Crawford were the prize-winners. The best seedling Carnation shown, Sweet Briar, is a clear brilliant pink, large and fragrant, and for this Edward Swayne received first premium. Another new Carnation from Mr. Swayne is the deep pink, Ophelia.

The attendance was remarkably large, so that the two floors of the Armory Building were often uncomfortably crowded. The arrangement, especially of cut flowers in the suites of rooms on the first floor, was tasteful and convenient, and while the light from the chandeliers was not strong enough to bring out the best color-effects in the evening, the flowers kept in good condition longer than in the old hall, with its many gaslights, suggesting the advantage of electric lighting for flower-shows.

Notes.

Berberis Thunbergii is one of the shrubs which hold their foliage late. The leaves still show their bright autumn coloring, and the numerous red berries add to their rich effect.

This Japanese Barberry is beautiful at all seasons, and is one of the very best shrubs of its class.

No one deplored the unnecessary destruction of our forests more than Francis Parkman, and the very first issue of this paper contained a plea from his pen for the preservation of the forests of the White Mountains.

In nuts, the most prominent display at the World's Fair was a collection of English walnuts by the Los Nietos and Ranchito Walnut Growers' Association, of Riviera, California. These nuts were shown in a brilliant glass tower some twenty-five feet high. George W. Ford, of Santa Anna, California, showed fifteen varieties of walnuts. The other nut exhibits, aside from Pecans, were comprised in various miscellaneous collections.

Collections of Asia Minor plants this year include some probably new bulbous species. Several Snowdrops from different localities promise, by the distinctness of their bulbs, to give us, if not new species, at least distinct varieties. One which has been provisionally named Galanthus ochrospeila seems to be in the way of G. Elwesii, but larger and fuller than any of that species before collected. New Fritillaries are also reported, and a new form of Sternbergia lutea with flowers some five inches across. A hardy red-flowered Nymphæa has also been discovered, the advent of which into cultivation will be awaited with interest.

We observe in several agricultural journals favorable mention of what is called the Improved Dwarf Rocky Mountain Cherry, which is said to be a spreading bush not more than four feet high, with fruit ripening a month later than the Morello varieties, and of fair, but uneven, quality. The bushes are said to fruit while very young and to bear every year. No doubt, this is the Cherry which is alluded to in Bulletin No. 38 of the Cornell Experiment Station by Professor Bailey. He describes the plant, which is wild in Colorado, Utah and Nebraska, as having the aspect and light color of Prunus cuneata, but with thick and pointed leaves, which distinguish it from that species. Its affinity is with P. pumila, but it entirely lacks the wand-like and willowy character of that plant, and Professor Bailey is inclined to regard it as a distinct variety, if not a distinct species.

The most valuable tree produced in New South Wales is the so-called Red Cedar, Cedrela australis, which owes its common name to the sweet smell of its wood. It is much lighter in weight than mahogany, although it bears considerable resemblance to that wood and is used for the same purposes, that is, for cabinet-work and furniture in general, and for the fittings of buildings, where the cost is not too great. Where it is kept dry it is very durable. Naturally of a pleasing red, it turns to a deeper and richer color with age, and some trees have a beautiful grain. In a recent number of the *Agricultural Gazette*, published at Sydney, interesting particulars are given in regard to the establishment of forest-preserves of this timber, and it is gratifying to learn that even in this new country extensive plantations of young Cedar are being made every year and are flourishing finely.

Herbaria were a part of the exhibits on the dome gallery of the Horticultural Building. Most of the plants were mounted upon sheets, secured in swing frames, like pictures, being covered with glass. A herbarium representing Colorado plants, by Mrs. S. B. Walker, one showing the Oregon flora, a very large exhibit of Missouri plants by Frank Bush, a Kentucky display, a private collection by Nettie Palmer, Edison Park, Illinois, and a series of excellent sketches and water-colors of the plants of Warren County, Kentucky, by Miss Sadie F. Price, were all hung in this fashion. Montana had a large exhibit of plants in portfolios, made by Dr. F. D. Kelsey, and there was a small portfolio collection from Wisconsin. A small private collection of Montana plants was shown by Mrs. Lydia A. Fitch, of Sheridan, Montana, and a very interesting and valuable cabinet display of the fleshy and economic fungi of New York was made by Dr. C. H. Peck.

The flower-shows held in several cities last week amply proved by their attendance that there is no falling off of interest in Chrysanthemums; and they showed, too, that there is really little danger that the time will soon come when growers will cease to find fresh attractions in these flowers. Every year we have new tints or new combinations of tints and variations in form, which keep up the interest, and every year growers learn how to do them better and better. In Chicago the exhibitions came from twenty-one different states, covering an area from the Atlantic to the Pacific and from Canada to New Orleans. In Philadelphia and Boston the plants were better than were ever seen before, and the prize-winning group in Boston had the merit of a harmonious general appearance, owing to a skillful selection and arrangement of colors. In this city no former exhibition has ever approached the one just held in the general excellence of its cut flowers and in the orderly and systematic arrangement of the exhibits.

In a late number of the *American Agriculturist* Mr. Joseph F. James, of the United States Department of Agriculture, gives an account of some investigations which were originally undertaken to ascertain the life-history of the organism which caused Pear-blight. Having ascertained that when insects were excluded from the Pear-flowers the blight was prevented, it was manifest that the disease-germs were carried from one flower to another. This led to the further discovery that in some varieties of Pears, when insects were excluded, the blossoms did not set fruit, and further attempts at fertilization were made with pollen taken from the same flower, from another flower of the same cluster, from a different flower on the same branch, from another tree of the same pomological variety, and from a tree of a different variety. The result was that when Bartlett pollen, whether from the same flower, a different flower, a different branch, or a different tree, was applied to the pistil of Bartlett-flowers no fruit was produced, but when pollen from a different variety was placed on the pistil of the Bartlett-flower fruit grew well formed. The varieties Anjou and Winter Nelis were also found to be incapable of self-fertilization, although they produced fruit when crossed with Bartlett pollen, and the Bartlett fruited when crossed with their pollen. Mr. Waite, the special agent in charge of the work, gives tentatively the following general result of his investigation: (1) Most varieties of cultivated Pears and Apples require cross-fertilization, that is, the transfer of pollen from a different pomological variety for successful fruitage; (2) Bees and other insects perform the work of cross-fertilization; (3) The weather, at the time of flowering, has an important influence on the visit of bees and insects, and through these upon the setting of fruits. Some varieties of Pears are self-fertile, and these can be planted in large blocks without other varieties; but solid blocks of varieties known to be wholly or partially self-sterile should not be planted without introducing kinds known to be active fertilizers. Of course, care should be exercised to select trees for their pollen which blossom at the same time as the self-sterile varieties.

Grapes, at this season, give the note to the fruit-market, and while the supply from New York state is not as heavy as during recent weeks, it is plentiful, and prices are the same as a week ago. Selected Delawares are sold at the rate of six cents a pound, and Concords at three cents, most of the fruit coming now in five-pound baskets. California grapes in some sections of the city are even more commonly seen than the native fruit, and a good quality of Flame Tokays and Cornichons are as low as eight cents a pound, while Muscats are six cents; the choicest fruit of these varieties sell at from twelve to fifteen cents in the fancy-fruit stores. Malaga grapes are offered on the street-stands at ten cents a pound, the largest and best-flavored bringing twenty-five cents in the stores. Baldwin apples of high quality bring from thirty to fifty cents a dozen, and King apples the same price. A small supply of Newtown pippins is eagerly bought up by those who appreciate the qualities of this apple, and these bring seventy-five cents to a dollar a dozen. They come from Long Island and Virginia, and while the southern fruit is larger and more showy, the dealers here contend that the apples grown at the north excel in flavor and carry better. But few of these apples find a market at home, fruit of a mellow quality being more in favor here. The greater part of the crop is exported to England, where these pippins are especially esteemed, not only for their flavor, but for their crispness, and those of medium and small size are considered the most desirable for use as dessert. A wide choice of pears is offered, the large, highly colored Clairgeau being the most attractive, and the Comice the best-flavored of all. Bosc and Winter Nelis range from thirty cents to a dollar a dozen, and Seckel pears from the New England states are forty to seventy-five cents. New hand-picked figs are thirty cents a pound, and Fard dates fifteen cents. Mandarin oranges, which are now beginning to come from Florida fairly ripened, are forty cents a dozen; large Navel oranges from the same state are a dollar a dozen, and pineapples are thirty-five cents apiece. The cargoes of bananas now arriving are light, but the supply on hand is large, and wholesale prices for this fruit are lower than they have been for some months. Winter berries are fifteen cents a pint, and large, firm, dark-colored Cape Cod cranberries at ten cents a quart sell briskly since cooler weather has set in.